1867MNRAS..27...84T

1866, November 27.

Occultation of o Leonis.

		h	m	s		
Disappearance	=	11	12	58·60	G.M.T.;	Definition good; power 70.
Reappearance	=	12	9	39·29	,,	Dark limb very visible and well defined; power 40.

Mr. Barclay's Observatory,
Leyton.

Observations of Total Eclipse of the Moon, 1866, *September* 24.

By John Tebbutt, jun., Esq.

I forward my observations of the total eclipse of the Moon which occurred on the 24th–25th ultimo. Owing to the ill-defined character of the Earth's shadow it was impossible to observe the different phases with accuracy. The following are the results:—

		d	h	m	s	
Beginning of total phase	Sept.	24	11	22	2	Windsor M.T.
End of total phase	,,		12	58	33	,,
Last contact with the shadow ...	,,		13	58	9	,,

The Moon was of a bright copper hue throughout the total phase, and was distinct enough to admit of both limbs being observed with the transit instrument. The resulting Right Ascension, compared with the *Nautical Almanac*, gives $10^{\mathrm{h}}\ 3^{\mathrm{m}}\ 15^{\mathrm{s}}\cdot 8$ as the longitude of the Observatory East of Greenwich. At the middle of the eclipse the north-west portion of the disk was remarkably bright, the *Via Lactea* was now beautifully distinct. Eighteen minutes before the end of the total phase the eastern limb began to grow very sensibly brighter. By far the most accurate observation on the occasion was that of an occultation of a star of the 7th magnitude near the northern limb during the totality. The star maintained its full brightness up to the time of disappearance, which occurred instantaneously at $11^{\mathrm{h}}\ 31^{\mathrm{m}}\ 7^{\mathrm{s}}\cdot 5$ Windsor mean time. I have observed many occultations of stars at the Moon's dark limb, but do not remember having seen one in which the disappearance was so remarkably sudden. The reappearance, unfortunately, was not observed. The sky was beautifully clear during the early period of the total phase, but after midnight a dense fog came on which partially obscured the Moon. The end of the eclipse was observed through thin clouds, which came rapidly from the south.

The following corrections should be made in my communi-

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1867MNRAS..27...85W

cations published in the *Notices of the Royal Astronomical Society:*—

Vol. XXV.,

p. 43, 5th line from bottom,	*for*	21st August	*read*	19th August.
43, 4th	,,	19th August	,,	21st August.
194, 8th	,,	$* - 2'\ 48''\!\cdot 1$	,,	$* + 2'\ 48''\!\cdot 1$.
195, 9th line from top,		$\Delta\lambda = -90''\!\cdot 4$	,,	$\Delta\lambda = -90''\!\cdot 0$.
258, 14th	,,	Feb. $22^d\ 7^h\ 55^m\ 9^s$	,,	Feb. $22^d\ 8^h\ 15^m\ 9^s$.

Windsor, New South Wales,
October 22*nd,* 1866.

On the Correction of the Secondary Spectrum of Object-Glasses.
By W. Wray, Esq.

Having been engaged for many years in experiments relating to the residual spectra of refractors, I beg leave to say a few words on the subject, and to announce that I have completely succeeded in removing all trace of chromatic aberration from object-glasses, upon a system extremely simple, and by no means expensive. The results which have been well, and for a long time tested, appear to warrant me, at once, to make the matter known to the Members of the Society. It is not my intention, at present, to occupy an undue share of attention, nor to enter into many details; these I would reserve for a more extensive paper, if the matter possess sufficient interest.

The subject of the irrationality of spectra is one which has engaged my investigation since 1855. It occurred to me in that year, after an examination of the quantities of residual colour given by first-class object-glasses, that there might be found such a difference of irrationality between two independent sets of glasses, as to allow of a compensation by opposite effects. In this expectation I was, however, disappointed, for I found that within the range of materials to be readily obtained in practice, the difference of irrationality between any given two pairs was comparatively inconsiderable. One thing, however, I learnt by this, what appears as a large residue of secondary colour in many fine refractors, is not really so, but a mixture of *primary* and *secondary;* consequently, the results, as obtained from two object-glasses of the same aperture, focus, and power, by different makers, and made from different materials, are often vitiated by their not being in a fair condition for rigorous comparison.

Having, however, subsequently freed such glasses from all trace of *primary* chromatic aberration, I found, as is well known, that the higher the dispersive ratio the greater the residual spectrum; but the comparative difference in even

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